CLAIMS

1. A method of detecting a photoelectric conversion amount, for detecting a photoelectric conversion amount of a photoelectric converter which comprises a thin film transistor including a photosensitive semiconductor layer, said method comprising the steps of:

(1) storing a predetermined amount of charge in an auxiliary capacitance connected to a drain electrode of said thin film transistor;

(2) emitting a light beam onto said photosensitive semiconductor layer for a predetermined time in a non-conductive state of said thin film transistor after the predetermined amount of charge has been stored in said auxiliary capacitance in said step (1); and

(3) detecting the photoelectric conversion amount that is an amount of an optical current as converted by said photoelectric converter, based on an amount of charge remaining in said auxiliary capacitance after emitting a light beam onto said photosensitive semiconductor layer in said step (2).

2. The method of detecting photoelectric conversion amount as set forth in claim 1, characterized by further comprising the step of:

completely discharging said auxiliary capacitance before carrying out said step (1) of storing the predetermined amount of charge in said auxiliary capacitance.

3. The method of detecting photoelectric conversion amount as set forth in claim 1, characterized in that:

said step (1) of storing the predetermined amount of change in said auxiliary capacitance is carried out by adopting a gate electrode driving voltage for use in driving a gate electrode of said thin film transistor.

4. The method of detecting photoelectric conversion amount as set forth in claim 1, characterized in that:

said step (1) of storing the predetermined amount of charge in said auxiliary capacitance is carried out by applying a voltage to one of electrodes of said auxiliary capacitance, formed on an opposite side of the one connected to a drain electrode of said thin film transistor.

5. The method of detecting photoelectric conversion amount as set forth in claim 1, characterized in that:

said step (1) of storing the predetermined amount of charge in said auxiliary capacitance is carried out by applying a voltage to a source electrode of said thin film transistor.

6. The method of detecting photoelectric conversion amount as set forth in claim 1, characterized in that:

the charge to be released from the source electrode of said thin film transistor by emitting a light beam is erased in a non-conductive state of said thin film transistor.

7. The method of detecting photoelectric conversion amount as set forth in claim 1, characterized in that:

during a period of detecting the photoelectric conversion amount of said photoelectric conversion element, an emission of a light beam onto said thin film transistor is stopped.

8. A photoelectric converter, comprising:

at least one a photoelectric conversion element provided with a thin film transistor having a photosensitive semiconductor layer and an auxiliary capacitance connected to a drain electrode of the thin film transistor; and

photoelectric conversion amount detection means for detecting a photoelectric conversion amount, that is an amount of optical current as converted by said photoelectric conversion element, said photoelectric conversion amount detecting means being connected to a source electrode of said thin film transistor,

wherein a predetermined amount of charge is stored in said auxiliary capacitance, and the charge stored in said

auxiliary capacitance is released from said auxiliary capacitance by emitting a light beam onto said thin film transistor in a non-conductive state; and

said photoelectric amount detection means detects the photoelectric conversion amount as converted by said photoelectric conversion element based on an amount of charge remaining in said auxiliary capacitance after an emission of a light beam onto said photosensitive semiconductor layer has been completed.

9. The photoelectric converter as set forth in claim 8, wherein:

said photoelectric conversion amount detection means includes an amplifier circuit for amplifying the charge to be transferred from said auxiliary capacitance.

10. An image input method for inputting as image data, an optical current generated by a light reflected from a document image as converted by a photoelectric conversion element provided with a thin film transistor including a photosensitive semiconductor layer, comprising the steps of:

(1) storing a predetermined amount of charge in an auxiliary capacitance connected to a drain electrode of said thin film transistor;

(2) emitting a light beam onto said photosensitive

semiconductor layer for a predetermined time in a non-conductive state of said thin film transistor after carrying out said step (1) of storing the predetermined amount of charge in said auxiliary capacitance; and

(3) detecting a photoelectric conversion amount that is an amount of optical current as converted by said photoelectric conversion element based on an amount of charge remaining in said auxiliary capacitance after carrying out said step (2) of emitting a light beam onto said photosensitive semiconductor layer for the predetermined time, and outputting the result of detection as image data.

11. An image input device, comprising:

said photoelectric converter of claim 8 provided in plural number, each corresponding to a document image; and

image data output means for outputting, as input image data of the document image, the photoelectric conversion amount converted by said photoelectric conversion element as detected by each of said plurality of said photoelectric converters.

12. The image input device as set forth in claim 11, comprising:

light emission means for projecting a red light beam, a green light beam and a blue light beam respectively onto a

document image, wherein:

said image data output means outputs as a color image, the image data as input based on the photoelectric conversion amount converted by said photoelectric conversion element as detected according to light beams in respective colors emitted from said light emission means.

13. The image input device as set forth in claim 11, wherein said plurality of photoelectric converters are arranged in 1D.

14. The image input device as set forth in claim 11, wherein said photoelectric converters are arranged in 2D.

15. A two-dimensional image sensor, comprising:

a plurality of data lines;

a plurality of scanning lines which interest said data lines;

a photoelectric conversion element including i) a plurality of thin film transistors, each including a photosensitive semiconductor layer, provided at respective intersections between said plurality of data lines and said plurality of scanning lines, and ii) auxiliary capacitances for storing the charge, said auxiliary capacitances being

connected to respective drain electrodes of said plurality of thin film transistors;

photoelectric conversion amount detection means for detecting a photoelectric conversion amount that is an amount of optical current as converted by each of said plurality of photoelectric conversion elements, said photoelectric conversion amount detection means being connected to respective source electrodes of said thin film transistors; and

image data output means for outputting as image data, a result of detection by each of said photoelectric conversion amount detection means,

wherein a predetermined amount of charge is stored in each of said plurality of auxiliary capacitances, and the charge is released from said auxiliary capacitance by emitting a light beam in a non-conductive state of corresponding thin film transistor; and

said photoelectric amount detection means detects a photoelectric conversion amount that is an amount of an optical current as converted by said photoelectric conversion element based on an amount of charge remaining in said auxiliary capacitance after an emission of a light beam onto said photosensitive semiconductor means has been completed.

16. The two-dimensional image sensor as set forth in

claim 15, wherein:

said plurality of data lines, said plurality of scanning lines, said thin film transistors and said auxiliary capacitances are formed on a transparent substrate.

17. The two-dimensional image sensor as set forth in claim 16, wherein:

a transparent protective film is formed on a surface of said transparent substrate on a side where said plurality of thin film transistors are formed.

18. The two-dimensional image sensor as set forth in claim 16, wherein:

said light emission means is provided on a surface of said transparent substrate on a side opposite to the side where said plurality of thin film transistors are formed; and

a light beam is emitted onto an object on the surface having formed thereon said plurality of thin film transistors, and a light reflected from the object is incident on said plurality of thin film transistors.

19. The two-dimensional image sensor as set forth in claim 15, further comprising:

light emission control means for controlling an emission of a light beam from said light emission means,

wherein after the predetermined amount of charge has been stored in said auxiliary capacitance, said light emission control means controls said light emission means to emit a light beam for a predetermined time; and

said photoelectric conversion amount detection means detects a photoelectric conversion amount that is an amount of optical current as converted by said photoelectric conversion element based on an amount of charge remaining in said auxiliary capacitance in a period in which an emission of a light beam is stopped after the light beam has been emitted by said light emission means for a predetermined time.

20. A method of driving said two-dimensional image sensor of claim 15, comprising the steps of:

(1) storing a predetermined amount of charge in each of said plurality of auxiliary capacitances connected to respective thin film transistors; and

(2) detecting after carrying out said step (1), a photoelectric conversion amount that is an amount of optical current as converted by each of said plurality of photoelectric conversion elements based on an amount of charge remaining in said auxiliary capacitance by conducting said plurality of thin film transistors in order by driving said plurality of scanning lines.

21. A method of driving said two-dimensional image sensor of claim 19, comprising the steps of:

(1) storing a predetermined amount of charge in each of said plurality of auxiliary capacitances connected to respective thin film transistors;

(2) emitting after carrying out said step (1), a light beam by said light emission means for a predetermined time; and

(3) detecting the photoelectric conversion amount as converted by said photoelectric conversion element based on an amount of charge remaining in said auxiliary capacitance by conducting said plurality of thin film transistors in order by driving said plurality of scanning lines, by stopping an emission of a light beam by driving the scanning lines after said step (2).